

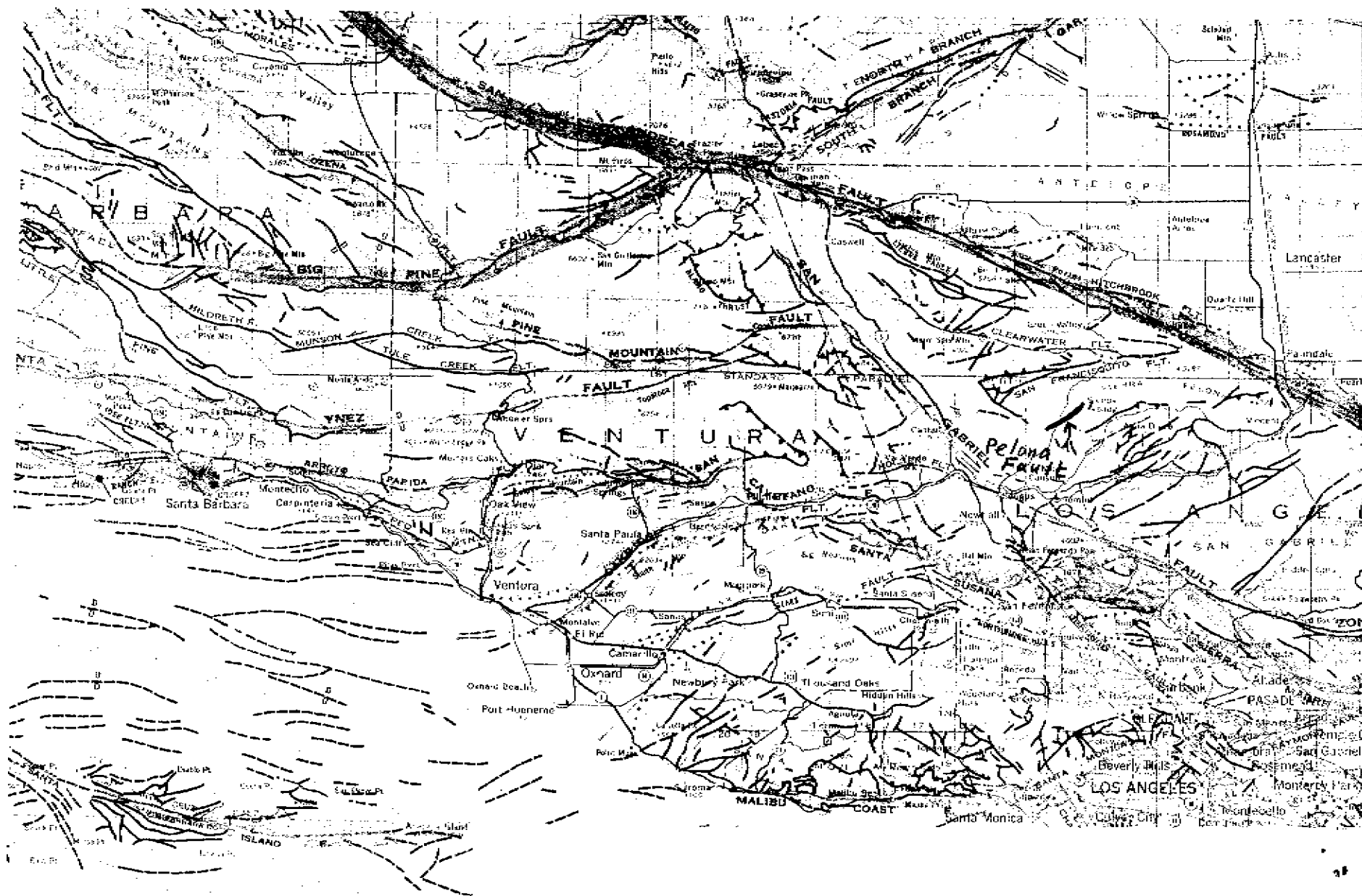
CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-62

September 7, 197~~8~~⁷

1. Name of fault: Pelona fault.
2. Location of fault: Mint Canyon and Green Valley 7.5 minute quadrangles, Los Angeles County (see figure 1).
3. Reason for evaluation: Part of a ten-year program.
4. List of references:
 - a) Crowell, J.C., 1968, Movement histories of faults in the Transverse Ranges and speculations on the tectonic history of California in Proceedings of conference on geologic problems of San Andreas Fault System, Dickinson, W.R., and Grantz, A., editors: Stanford University Publications, Geological Sciences, v. XI, p. 323-341.
 - b) Dibblee, T.W., Jr., 1961, Geologic map of the Bouquet Reservoir quadrangle, Los Angeles County, California: U.S. Geological Survey, Mineral Investigations Field Studies Map MF-79, scale 1:62,500.
 - c) Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, Geologic Data Map Series, Map no. 1, scale 1:750,000.
 - d) Simpson, Edward C., 1933, Geology of the Elizabeth Lake quadrangles, California: Unpublished Ph.D. thesis, University of California, map scale 1:62,500.

Figure 1. Location of Pelona fault described in FER-62 (base map from Jennings, 1975).



5. Summary of available data*:

Jennings (1975, see figure 1, after Crowell, 1968, p. 327) depicts the Pelona fault as a Quaternary fault. Dibblee (1961) indicates that the Pelona fault is a northwest-dipping, normal fault which does not cut Pleistocene older alluvium, and cuts nothing younger than Vasques Fm. (Oligocene and lower Miocene).

The only text describing the Pelona fault is that of Simpson (1932, p. 115, 121). He states that the fault is either a normal or vertical fault which is not well exposed except in a few isolated localities. In his opinion, the fault originated during the late Tertiary or early Quaternary. He considered the fault to be "live" (to have moved during the Quaternary, and be a fault along which future movement may occur), but lacking evidence of very recent movement.

6. Interpretation of air photos:

Fairchild air photos, flight C300 (1928, scale 1:1250), photos F1, F3, F32, F33, and E236-E239, were examined stereo-scopically. A definite change in slope was noted (see plate 1*) but this feature is quite probably due to differential erosion. No other fault related features were noted. The alluvium within Bouquet Canyon appeared not to be affected by the fault.

7. Field observations: Not attempted.

8. Conclusions:

The Pelona fault may well be a Quaternary fault as Crowell (1968) and Simpson (1932) state (see item 5). If indeed the fault is a normal fault as mapped by Dibblee (1961), any of the drainages crossing the fault

*Retyped from original notes; original report lost. Plate 1 not reproduced.

would be ponded. The fact that no ponds exist suggest that either the fault is not a normal fault, or that it is not a Holocene fault.

Similarly, if the fault were a reverse fault, and had moved during the Holocene (assuming a significant displacement), any drainage crossing the fault should have a visible nick point any drainage crossing it. No such feature was noted. Strike-slip displacement is unlikely since no drainages appear to be offset.

Thus, it appears that the Pelona fault is probably pre-Holocene in age and is rather poorly exposed.

9. Recommendations:

More work appears to be unnecessary and, since the fault is in a remote area, is not recommended. Based on the information summarized in this report, and the present project guidelines, zoning of the Pelona fault is not recommended.

10. Investigating geologist's name; date:

THEODORE C. SMITH
Assistant Geologist
September 7, 1977

*I agree with
recommendations.
ECSH
(originally initialed
9/21/77)*

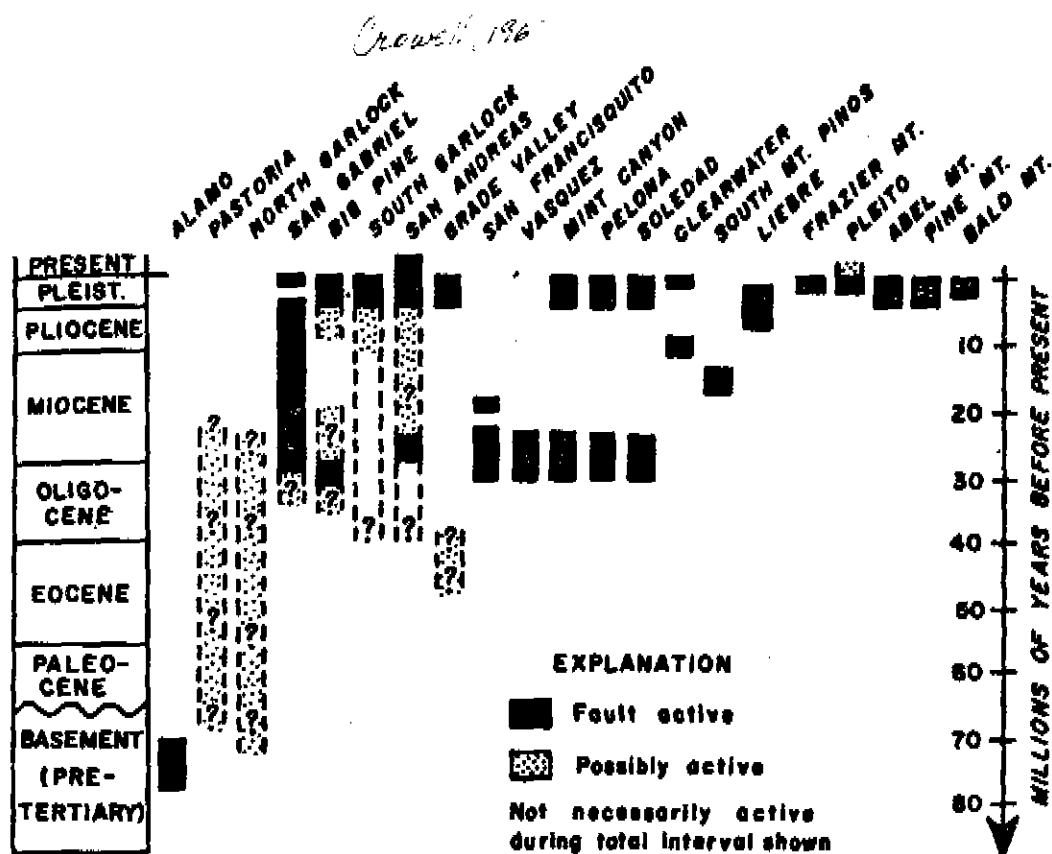


Figure 3.--Time of faulting for some major faults of the Tejon Pass and Soledad Basin regions, southern California.

Many faults with a northeasterly trend show evidence of strong activity during the late Oligocene-early Miocene. Sedimentary breccias of the Vasquez Formation in the eastern Soledad Basin document dip-slip displacements on such faults. Source areas in the San Gabriel Mountains were raised with respect to basins on the northwest. Similar very coarse sedimentary breccias (Flush Ranch or Simmler Formation) are preserved along the Big Pine fault, indicating that this fault was also active during the same interval and that a nearby steep scarp shed coarse debris to the northwest (Carman, 1964; Kahle, 1966). Along the Big Pine fault, the sedimentary breccias have since been displaced left laterally about 14 kilometers (Poyner, 1960). These similarities between the Big Pine fault and faults of the same trend and history in the Soledad basin suggest that they are counterparts offset on the San Gabriel fault. Such a correlation is now reasonably well supported by studies of the intervening terrane (Crowell, 1962, 1964; Carman, 1964) which show that the San Gabriel fault probably has a right slip of about 48 km. Note that the Big Pine and Garlock faults are basically different faults. Although they were probably aligned for a time during the